Cat Toy

BACKGROUND OF THE INVENTION

1. Technical Field

[01.00] This invention relates generally to pet supplies, and more particularly to a toy for stimulating and exercising cats.

2. Description of Related Art

[02.00] Cat toys help keep cats occupied, exercised, and out of trouble. In addition, cat owners enjoy watching their cats play. For these and other reasons, many cat toys are commercially available at pet stores and other retail outlets. However, the right combination of cat-attracting, owner-pleasing, and child-safe attributes remain somewhat elusive and so a need exists for a better cat toy.

SUMMARY OF THE INVENTION

[03.00] This invention addresses the need outlined above by providing a motorized wand from which a cat-attractive object is tethered. An electronic circuit starts and stops rotation of the wand about a motor-supporting structure at various times and at adjustable speeds. The cat is kept busy, exercised, and out of trouble with an owner-pleasing apparatus that is safe for children to use.

[04.00] To paraphrase some of the more precise language appearing in the claims and further introduce the nomenclature used, a cat toy apparatus constructed according to the invention includes a base and a motor-supporting structure on the base. An electric motor within the motor-supporting structure rotates an object-holding arm that extends upwardly and radially outwardly from the motor-supporting structure to a cat-attractive object that is connected by a flexible line to the arm.

[05.00] The base has a hollow interior. The motor-supporting structure also has a hollow interior that extends along a central axis. With the base resting on a horizontal support surface, the motor-supporting structure extends upwardly from the base with the central axis disposed vertically and the electric motor aligned with the central axis.

[06.00] The object-holding arm is connected to the motor. It includes an elongated member having a proximal end portion connected to the motor and a distal end portion disposed upwardly and radially outwardly from the motor-supporting structure. The cat-attracting object is connected with the flexible line to the distal end portion of the object-holding arm. An electronic circuit in the base serves as means for powering the electric motor in order to rotate the object-holding arm and thereby move the cat-attracting object about the motor-supporting structure.

[07.00] In one embodiment, the electronic circuit includes means for enabling a user to select a running time after which the electric circuit automatically turns the electric motor off, means for enabling a user to select a speed at which the electric motor operates, and means for automatically reversing motor direction at various time intervals. The electronic circuit may also include means for detecting a cat in close proximity to the apparatus and for automatically turning the electric motor on upon so detecting the cat.

[08.00] Preferably, the cat toy apparatus includes at least four base-stabilizing members on the base that are rotatable by a user from deployed positions, in which the base-stabilizing members extend outwardly from the base, to storage positions in which the base-stabilizing members are retracted from the deployed positions. In addition, the base includes an upper side, the electronic circuit includes a circuit-controlling knob, and cat-ear-depicting graphics cat-eye-depicting graphics and cat-whisker-depicting graphics on the upper side of the base that combine with the circuit-controlling knob to depict a cat face for which the circuit-controlling knob depicts a cat nose. Furthermore, the motor includes a rigid shaft extending upwardly and radially outwardly from the motor-supporting structure to a terminal end portion of the rigid shaft, and the object-holding arm includes a slender, plastic wand that is adapted to be removable attached to the terminal end portion of the rigid shaft in slide-on engagement of the terminal end portion in order to facilitate arm replacement.

[09.00] Thus, the invention provides a cat toy apparatus having just the right combination of cat-attracting, owner-pleasing, and child-safe attributes. The following illustrative drawings and detailed description make the foregoing and other objects, features, and advantages of the invention more apparent.

BRIEF DESCRIPTION OF THE DRAWINGS

[10.00] FIG. **1** of the drawings is an isometric view of a cat toy apparatus constructed according to the invention;

[11.00] FIG. **2** is a bottom plan view of the base portion of the apparatus showing the retracted storage position of one of the base-stabilizing members with phantom lines;

[12.00] FIG. **3** is a back elevation view of the apparatus with the object-holding arm foreshortened for illustrative purposes;

[13.00] FIG. **4** is an enlarged front elevation of the cat toy apparatus with the base and motor-supporting structure in cross section as viewed in a vertical plane containing a line **4-4** in FIG. **1**; and

[14.00] FIG. **5** is a diagrammatic representation of the electronic circuit that powers the motor used to rotate the object-holding arm

and thereby move the cat-attracting object about the motor-supporting structure.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[15.00] FIGS. **1-5** of the drawings show various aspects of a cat toy apparatus constructed according to the invention in the form of a cat toy **10**. Generally, the cat toy **10** includes a base **11**, a motor-supporting structure **12**, and an object-holding arm **13**. The base **11** supports the rest of cat toy **10** upon a floor or other horizontal surface **14** (FIG. **3**), the structure **12** houses an electric motor **15** (FIGS. **4** and **5**), and the arm **13** holds a cat-attracting object **16** on a terminal end **17A** (FIG. **1**) of a cord or other flexible line **17** (FIGS. **1** and **5**).

[16.00] The base **11** (e.g., a molded plastic component) has an upper side **18** (FIGS. **1**, **3**, and **4**), an underside **19** (FIGS. **2**, **3**, and **4**), and a hollow interior **20** (FIG. **4**). The base **11** includes four stabilizing members in the form of four stabilizing bars **21**, **22**, **23**, and **24** (e.g., molded plastic). They are generally similar, each being mounted pivotally on the underside **19** of the base **11** with a spring-biased retainer, such as the spring-biased retainer **25** of the stabilizing bar **21** that is identified in FIG. **4**.

[17.00] That arrangement enables a user to pivot the stabilizer bars **21-24** from the deployed positions illustrated in FIGS. **1-4**, in which the stabilizing bars **21-24** extend outwardly from the base **11** for base-stabilizing purposes, to retracted storage positions in which the stabilizing bars **21-24** are pivoted inwardly out of the way. In the retracted storage position of the stabilizer bar **21**, for example, the stabilizer bar **21** is disposed as illustrated in FIG. **2** by phantom lines identified at reference numeral **21A**. The base **11** includes four rubber feet **26**, **27**, **28**, and **29** that the stabilizer bars **21-24** can clear when pivoted, by operation of the spring-biased retainer **25** for the stabilizing bar **21** and similar spring-biased retainers for the other stabilizing bars **22-24**.

[18.00] An electronic control circuit **30** located with the hollow interior **20** of the base **11** (FIG. **4**) is powered by three batteries **31** that are accessible by removing a battery cover **33** shown in FIG. **2**. The circuit **30** powers the electric motor **15** as described in more detail further on in this description. It functions as means for powering the electric motor **15** so that the motor **15** rotates the arm **13** and thereby moves the object **16** about the structure **12**. The motor **15** may take any of various forms, including various commercially available servo or control motors. It includes a rigid curved tail **34** (e.g., a curved metal shaft) that rotates when power is supplied to the motor **15**, and that imparts motion about the motor-supporting structure **12** to move the cat-attracting object **16**.

[19.00] The motor-supporting structure **12** (e.g., molded plastic) has a central axis **35** and a hollow interior **36** (FIG. **4**) extending along the central axis **35**. It is "motor-supporting" in that it supports the motor **15** atop the base **11** in alignment with the central axis **35**. The motor **15** occupies a position within the hollow interior **36** such that the motor **15** (i.e., the rotational axis of the motor **15**) is aligned with the central axis **35**, with the tail **34** extending upwardly beyond the structure **12** and radially outward relative to the central axis **35** to a distal end portion **34A** of the tail **34** that is identified in FIG. **1**. The motor-supporting structure **12** is connected to the base **11** and so arranged that with the base **11** resting on a horizontal support surface **37** (FIG. **3**), the motor-supporting structure **12** extends upwardly from the base **11** with the central axis **35** disposed vertically. As the motor **15** and the tail **34** rotate, the cat-attracting object **16** obits the support **12** and the central axis **35**.

[20.00] The object-holding arm **13** includes a slender, somewhat bendable, elongated member **38** (e.g., plastic) that is also referred to herein as a wand. The arm **13** is "object-holding" in that it holds the object **16** via the line **17**. It has a proximal end portion **39** connected to the motor **15** (i.e., the tail **34** of the motor **15**) and a distal end portion **40** disposed upwardly and radially outwardly from motor-supporting structure **12**. The flexible line **17** is connected to the distal end portion **40**. The proximal end portion **39** of the member **38** is hollow and opens proximally to form a female

component that is adapted to be removably attached to the terminal end portion **34A** of the rigid shaft **34** (the male component) in slide-on engagement of the terminal end portion **34A**. It slides tightly onto the terminal end portion **34A** to retain it there and yet it slides off when tugged upon for a quick disconnection that facilitates replacement of the object-holding arm **12**. The user can readily replace the arm **12** with any of various substitute arms having different cat-attracting objects (not shown). With further regard to the object **16**, it is "cat-attracting" in that it is larger than a penny (e.g., a 1.5-inch diameter fuzzy plastic ball with trailers extending from it) and it weighs less than a couple ounces (preferably less than an ounce) so that is easily moved by the motor 15 and attracts the attention of a cat. Substitute arm-and-object assemblies may be provided so that the user can pick out and use a favorite color and design.

[21.00] As an idea of size, the illustrated cat toy **10** has a circular portion of the base **11** measuring about seven inches in diameter. In their deployed positions, the stabilizing bars **21-24** extend outwardly from the rest of the base **11** about three inches. The support **12** stands about four inches upwardly beyond the upper side **18** of the base so that the support **12** extends to about six inches above the horizontal support surface **37** shown in FIG. **3**. In addition, the tail **34** extends about three and one half inches beyond the support **12**, and the elongated member extends about twelve inches beyond that, with the line **17** measuring about ten inches long. Of course, those

dimensions may vary. A cat toy may be constructed according to the inventive concepts described in any of various sizes.

[22.00] Turning now to FIG. **5**, it shows further details of the electronic control circuit **30**. The circuit **30** is powered by the batteries **31** and functions as means for powering (i.e., controlling) the motor **15** according to input from a user via an On/Off button **41**, a timer button **42**, and a speed-controlling knob **43** connected to a variable resistor **44**. In other words, the circuit **30** functions as means for powering the motor **15** in order to rotate the object-holding arm **13** and thereby move the cat-attracting object **16** about the motor-supporting structure **12** (preferably in a haphazard manner that is unpredictable to a cat). Input to the circuit **30** is also provided by a sensor **45** that functions as means for detecting a cat in close proximity to the cat toy **10** in order to automatically turn the circuit **30** on and power the motor **15** when the presence of a cat is so detected.

[23.00] One of ordinary skill in the art may use well-known components and circuit design techniques for an electronic control circuit that controls the motor **15** as desired. The illustrated circuit **30** is adapted to function as means for enabling a user to select a running time after which the electric circuit automatically turns the electric motor off. After turning the circuit **30** on with the On/Off button **41**, the user depresses the timer button **42** a selected number of times (up to a maximum of eight times), each depression

causing the circuit **30** to power the motor **15** for a fifteen-minute interval so that a total of eight depressions, for example, results in the circuit **30** powering the motor **15** for two hours. If the timer button **42** is not depressed after turning on the circuit **30**, the unit continues to run until the user turns it off or the batteries drain sufficiently.

[24.00] The circuit **30** is also adapted to function as means for enabling a user to select a speed at which the electric motor operates. The user turns the speed-controlling knob **43** and the circuit **30** powers the motor **15** accordingly. In addition, the circuit **30** is adapted to function as means for automatically reversing the direction of the motor **15** (i.e., reversing motor direction) at various times. One of ordinary skill may use well-known circuit elements and circuit design techniques to accomplish that operational characteristic. Reversing the motor **15** at various times cause the cat-attracting object **16** to dance about in a manner provocative to cats.

[25.00] In order to make the cat toy **10** even more attractive to children, graphics are provided on the upper surface **18** of the base **11** (FIG. **1**). Thus, the base **11** includes cat-ear-depicting graphics **51**, cat-eye-depicting graphics **52**, and cat-whisker-depicting graphics **53** on the upper side **18**. They

combine with the circuit-controlling knob **43** to depict a cat face. The knob **43** depicts a cat nose.

[26.00] Thus, the invention provides a cat toy apparatus having just the right combination of cat-attracting, owner-pleasing, and child-safe attributes, and it can be configured for use as a hunting decoy. It includes a support structure that is adapted to rest upon a horizontal support surface with its central axis disposed vertically. A motor assembly on the support structure includes an electric motor and an electronic circuit for powering the electric motor. An elongated member has a proximal end portion connected to the motor and a distal end portion from which an object is tethered by a flexible line. The motor assembly is adapted to function as means for rotating the elongated member in order to thereby move the object about the central axis of the support structure for purposes of attracting the attention of an animal, preferably moving the object with haphazard, unpredictable movement that cats and/or other animals find enticing. Although an exemplary embodiment has been shown and described, one of ordinary skill in the art may make many changes, modifications, and substitutions without necessarily departing from the spirit and scope of the invention.

[27.00] What is claimed is: